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APPLICATION FOR LETTERS PATENT

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IDENTIFIER LABEL APPLICATION SYSTEM

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IDENTIFIER LABEL APPLICATION SYSTEM

TECHNICAL FIELD

This invention pertains to a system for applying identifier labels, particles or micro-identification indicia, to articles or products.

BACKGROUND OF THE INVENTION

In many applications of product control and tracking, it is desirable to apply an identifier label, identifier particle or identifying indicia to various articles, including to products. The identifier labels or indicia are generally useful in or utilized to later identify the article(s) to which the indicia are applied or affixed.

There are situations where it is desirable to apply the identifier labels or indicia by generally applying them to the article, such as by spraying or by applying a plurality of the identifier labels or indicia generally such that there are too many applied to readily or easily remove them.

It is also desirable to provide an application system in which the same components or parts are exposed to multiple different identifier labels because it may be difficult to clean or remove all the particles from one application before the next application is commenced.

It is therefore an objective of this invention to provide a new identifier label application system.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are described below with reference to the accompanying drawings, which are briefly described below.

Figure 1 is a partial cross-sectional elevation view of one embodiment of a system contemplated by this invention;

Figure 2 is a partial cross-sectional elevation view of another embodiment of an application system as contemplated by this invention, which is portable and includes a portable source of dynamic fluid;

Figure 3 is an elevation view of another embodiment of a system contemplated by the invention, illustrating a pressurized container which contains a pressurized mixture of identifier labels and a base fluid; and

Figure 4 is a perspective view of one possible article, a vehicle, which this invention may be used to place identifier labels on.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Many of the fastening, connection, manufacturing and other means and components utilized in this invention are widely known and used in the field of the invention described, and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art or science; therefore, they will not be discussed in significant detail. Furthermore, the various components shown or described herein for any specific application of this invention can be varied or altered as anticipated by this invention and the practice of a specific application or embodiment of any element may already be widely known or used in the art or by persons skilled in the art or science; therefore, each will not be discussed in significant detail.

The terms "a", "an", and "the" as used in the claims herein are used in conformance with long-standing claim drafting practice and not in a limiting way. Unless specifically set forth herein, the terms "a", "an", and "the" are not limited to one of such elements, but instead mean "at least one".

The term identifier label includes identifiers, identifier labels, identifier particles and identifying indicia, and as used herein is not limited to any specific one type of particle, label or identifier, but instead is each meant to include all unique identifiers, identifier particles and identifiable labels, including without limitation, micro-labels, DNA identifiers, synthetic DNA labels, biological elements, rare earth minerals utilized for tracing (such as those minerals and services offered by Austguard of Perth Australia), UV detectable particles or substances, micro dots, data dots, unique or identifiable chemical compounds and others.

1 The term dynamic fluid as used herein may be, without limitation, any one
2 of a number of gases, or liquid fluids, foams, and others, with no one in
3 particular being required to practice this invention, and with air being the
4 preferred dynamic fluid. An aerosol or air and aerosol combination may be
5 utilized for a portable embodiment of the invention.

6 The term base fluid as used herein means any substance or material that
7 is mixed with or contains the identifier labels, and which may be discharged with
8 the identifier labels. The base fluid may inherently include or contain the
9 identifier labels. The base fluid may even be solid or semi-solid prior to use,
10 and additives or heat may be added to allow it to be discharged as desired. This
11 may require heating, adding a solvent or some other means to cause it to go to
12 a fluid state. This invention also contemplates a number of different relative
13 proportions of identifier labels and base fluid with no specific proportion or
14 range of proportions being required to practice this invention. Examples of base
15 fluids, without limitation, are adhesives, paints, polymers, foam, undercoatings for
16 application to vehicles, to name just a few.

17 Figure 1 is a partial cross-sectional elevation view of one embodiment of
18 a container and an application system contemplated by this invention, illustrating
19 a dynamic fluid input hose 101 through which dynamic fluid 102 may flow,
20 conduit 103, framework 104, container 105, identifier labels 106, discharge feed
21 conduit 107, dynamic fluid conduit 108, valve 109, and discharge aperture 110.

22 In the embodiment of the invention illustrated in Figure 1, the applicator
23 100 has a handle area 112, a trigger 113 is pivotally mounted to the framework
104 about axis 114, and is utilized to actuate the flow of compressed fluid,

1 preferably air, through input hose 101. While a trigger is shown, any one of a
2 number of known activation devices or release mechanisms may be used within
3 the contemplation of this invention.

4 Conduit 103 is a tee which allows the air to pass to and through
5 framework 104 as well as through valve 109. The valve 109 controls the flow
6 of the dynamic fluid through conduit 108 which is routed into the container 105
7 and positioned such that the dynamic fluid is delivered to a position within the
8 container such that the identifier labels 106 are mixed with the base fluid.

9 In this embodiment of the invention, the dynamic fluid may also be utilized
10 to agitate, mix and continue to mix, the base fluid and the identifier labels 106.
11 In this embodiment it is preferable that the container be configured such that the
12 dynamic fluid is delivered within the container and within the mixture to create
13 or maintain a better mixture.

14 A conical or cone shaped bottom portion 105a of the container 105 has
15 been found as one of numerous possible shapes or configurations which facilitates
16 a desired mixing. Other shapes wherein there is a smaller cross section at lower
17 section may also achieve desired mixing results in some embodiments, however,
18 no particular configuration of the container 105 or bottom portion 105a of the
19 container is required to practice this invention, nor is it required to have a smaller
20 cross section at a lower section. Therefore container shapes such as cylindrical,
21 boxes and others may also be used within the contemplation of this invention.

22 The container 105 within the contemplation of this invention may also be
23 made of any particular material, which may render the container collapsible,
expandible, folding, rigid or semi-rigid, to name a few examples. For example

1 and without limitation, the container 105 may be made of a rigid steel or polymer
2 or of flexible, collapsible material such as coated organic products such as milk
3 cartons which may be folded and unfolded, bladder type bags (such as polymer
4 or polyester) which collapse, as well as numerous other possibilities.

5 It will also be noted by those of ordinary skill in the art that the container
6 105 need not be located below the discharge aperture 110, but instead may be
7 positioned above it or at any angle in between. In an embodiment in which the
8 container 105 is located above the discharge aperture 110, gravity may be partially
9 or wholly used in feeding the identifier labels, mixture and/or solution to the
10 discharge aperture 110.

11 The container 105 in this embodiment is actually in two pieces, an upper
12 and a lower, with the two attaching by threaded joint (as is evident from the
13 drawing). However this invention is not limited to any specific number of pieces
14 or ways of integrating or attaching the same.

15 *sub* Figure 2 is a cross-sectional view of another example of an embodiment
16 of this invention, illustrating a more self contained embodiment of an applicator
17 150, which only requires a source of a dynamic fluid (in this embodiment,
18 compressed air). Figure 2 illustrates container 151 with a hemispherical bottom
19 portion 151a, with a mixture 176a of identifier labels 174 and base liquid 175.
20 The mixture 176a may be prepackaged or the base fluid 175 may be later added.

21 A compressed air conduit 154 provides the source of dynamic fluid and
22 compressed air conduit 154 attaches to the applicator 150 at input aperture 153.
23 Discharge valve 170 controls the flow of the compressed air through discharge
nozzle 171 and to discharge aperture 152. The dynamic fluid exiting the nozzle

1 171 is represented by arrow 172. It should also be noted that nozzle 171 may
2 be preferred but not necessary as discharge valve 170 may be all that is utilized,
3 all within the contemplation and scope of this invention.

4 ~~Sub 157~~ Valve 157 controls the flow of the compressed air 159 through conduit 158
5 and into the mixture 176_a of identifier labels 174 and base fluid 175, and provides
6 an agitation or mixing of the identifier labels 174 with the base fluid 175.

7 ~~Sub 170~~ As discharge valve 170 is opened, compressed air flows out discharge
8 aperture 152 and draws the mixture 176_a through conduit 173 and into the
9 discharge aperture 152. The mixture 176b provided to the discharge aperture is
10 shown, as is the mixture 176c exiting the discharge aperture 152.

11 Framework 156 may be one piece with the container, it may be integral or
12 even positioned relative to it. Input chamber 155 receives the dynamic fluid and
13 facilitates its flow to discharge valve 170 and valve 157, both of which may be
14 any one of a number of different types of valves which are well known and
15 which would depend on the dynamic fluid chosen and the valving control desired.

16 The discharged mixture 176c may be atomized or it may just be drawn or
17 pushed out the discharge aperture 152, all within the contemplation of this
18 invention. Furthermore, this invention contemplates mixtures wherein the identifier
19 labels are already sufficiently contained within the material or substance such that
20 there is no need for mixing by any means, including with the introduction of a
21 dynamic fluid such as compressed air. The term "mixture" therefore also or
22 additionally includes substances, fluids, etc. wherein the identification
23 characteristics are inherent in the base fluid and no combining or mixing is

1 required. There are embodiments in which only a solvent is added to provide the
2 flow characteristics desired.

3 As this application is utilized, one identifier label may be used for one
4 production facility, or one particular identifier label may be used for each separate
5 article produced, such as for one vehicle.

6 Figure 2 also illustrates another embodiment or feature which is a more
7 portable system wherein the source of dynamic fluid is an aerosol type of can
8 or compressed fluid container 190 for example. In this embodiment, there are
9 numerous possible gases and/or fluids which may be the dynamic fluid, with
10 aerosols and foams merely being a few of the possible and readily available
11 portable sources. The container 151 may be disposable.

12 Figure 3 illustrates another embodiment contemplated by the invention,
13 showing a self contained portable and disposable system, illustrating a container
14 200, a discharge conduit, an activation lever 201, a mixture 203 of identifier
15 labels 204 and base fluid 205. The mixture 203 is generally compressed or
16 expandible and when the lever or activation device is activated, the mixture 203
17 is released through the discharge aperture and through whatever discharge conduit
18 202 is used for the specific application. The lever 201 activates a discharge valve
19 which is in or near the discharge aperture. There are a number of different
20 devices and mechanisms to valve and to actuate the release of the mixture, with
21 no one in particular being required to practice this invention. The base fluid 205
22 may be any one of a number of different base fluids as stated above, such as an
23 adhesive foam material. There are known containers with known valves for
containing and releasing pressurized fluids and foams.

1 Figure 4 illustrates one of the numerous possible articles on which identifier
2 labels may be applied using the invention, namely an article or vehicle 220.
3 Figure 4 illustrates how or where a mixture 221 of identifier labels mixed with
4 a base fluid such as an adhesive may be positioned or sprayed on the vehicle
5 220.

6 As will be appreciated by those of reasonable skill in the art, there
7 are numerous embodiments to this invention, and variations of elements and
8 components which may be used, all within the scope of this invention.

9 One embodiment of this invention for example involves an identifier
10 label container for use in combination with a source of dynamic fluid which
11 provides a force to apply identifier labels to an article, the container comprising:
12 a container with a plurality of predetermined identifier labels therein; a discharge
13 aperture in fluid communication with the container; and a fluid intake aperture
14 configured to receive the source of dynamic fluid and to direct it to the discharge
15 aperture; such that once the plurality of predetermined identifier labels are mixed
16 with a base fluid to form a mixture, the mixture may be discharged through the
17 discharge aperture.

18 Examples of some other or further embodiments may include embodiments
19 or configurations: wherein the container is disposed to receive dynamic fluid;
20 wherein the identifier labels are comprised of a DNA identifier; the base fluid is
21 an adhesive; the base fluid is a paint; the base fluid includes DNA molecules;
22 the base fluid includes predetermined ultra violet detectable particles or molecules;
23

1 the dynamic fluid is air; and in which there is a dynamic fluid conduit disposed
2 to deliver dynamic fluid to the container.

3 This invention further contemplates embodiments in which a mixture is
4 created in the container, such as when the base fluid is mixed with the identifier
5 labels in the container.

6 Other embodiments contemplated by the invention would include identifier
7 label applicators for use in combination with a source of dynamic fluid, the
8 applicator comprising: an applicator framework; a container operatively attached
9 to the framework and including a plurality of predetermined identifier labels
10 therein; a discharge aperture in fluid communication with the container such that
11 it may receive identifier labels from the container; and a fluid intake aperture
12 operative attached to the framework and configured to receive dynamic fluid and
13 direct it to the discharge aperture; such that once the plurality of predetermined
14 identifier labels are mixed with a base fluid to form a mixture, the mixture may
15 be discharged through the discharge aperture.

16 This invention also contemplates method embodiments, for example a
17 method for applying identifier labels to one or more articles, comprising the
18 following steps: providing an identifier label container for use in combination with
19 a source of dynamic fluid, the container comprising: a container with a plurality
20 of predetermined identifier labels therein; a discharge aperture in fluid
21 communication with the container; and a fluid intake aperture configured to
22 receive the source of dynamic fluid and to direct it to the discharge aperture;
23 mixing the identifier labels with a base fluid to form a mixture

1 providing dynamic fluid through the discharge aperture; and thereby discharging
2 the mixture through the discharge aperture.

3 A further method embodiment may further comprise the following steps of:
4 providing a dynamic fluid conduit disposed to deliver dynamic fluid to the
5 container; and delivering dynamic fluid into the mixture, thereby causing
6 movement of the mixture and a mixing of the base fluid and the identifier labels.

7 Examples of some other or further method embodiments may include
8 embodiments or configurations: wherein the container is disposed to receive
9 dynamic fluid; wherein the identifier labels are comprised of a DNA identifier;
10 the base fluid is an adhesive; the base fluid is a paint; the base fluid includes
11 DNA molecules; the base fluid includes predetermined ultra violet detectable
12 particles or molecules; the dynamic fluid is air; and in which there is a dynamic
13 fluid conduit disposed to deliver dynamic fluid to the container.

14 Yet another embodiment, a more autonomous or portable embodiment, is
15 an identifier label container comprising: a container with an internal cavity in
16 which there is a pressurized mixture of a plurality of predetermined identifier
17 labels and a base fluid; a discharge aperture in fluid communication with the
18 internal cavity of the container; and a container valve in fluid communication
19 with the internal cavity and which is disposed to release the mixture from the
20 internal cavity upon activation of the container valve to a desired location.

21 In compliance with the statute, the invention has been described in language
22 more or less specific as to structural and methodical features. It is to be
23 understood, however, that the invention is not limited to the specific features
shown and described, since the means herein disclosed comprise preferred forms

1 of putting the invention into effect. The invention is, therefore, claimed in any
2 of its forms or modifications within the proper scope of the appended claims
3 appropriately interpreted in accordance with the doctrine of equivalents.
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